

Curriculum Vitae

Mark Turlington

Berry College
Department of Chemistry and Biochemistry
McAllister Hall 305B

phone: (706) 378-2947
email: mturlington@berry.edu

Education

- Ph.D. Chemistry, University of Virginia, Charlottesville, VA, August 2011.
- B.S. Chemistry, *summa cum laude*, Furman University, Greenville, SC, 2006.

Positions

- **Assistant Professor of Chemistry**, Berry College, 2013-present.
- **Adjunct Chemistry Faculty**, Nashville State Community College, Fall 2012.
- **Postdoctoral Fellowship**, Vanderbilt University, 2011-2013.

Courses Taught

- **CHM 221** (Organic Chemistry I)
- **CHM 221L** (Organic Chemistry I Laboratory)
- **CHM 222** (Organic Chemistry II)
- **CHM 222L** (Organic Chemistry II Laboratory)
- **CHM 341** (Biochemistry I)

Research Experience

- **Postdoctoral Research Fellow**, 2011-2013.
Vanderbilt University, Advisor: Dr. Craig Lindsley.
 - Synthesis of small molecules for positive allosteric modulation of the mGluR₅ receptor and small molecules for inhibition of coronavirus 3CL protease.
 - Natural product total synthesis.
- **Graduate Student Researcher**, 2007-2011.
University of Virginia, Advisor: Dr. Lin Pu.
 - Design of novel BINOL based ligands for asymmetric transition metal catalysis.
 - Development of new methodologies for asymmetric metal-catalyzed alkyne additions to aldehydes and applications of the resulting chiral propargylic alcohols in diastereoselective transformations.
- **Undergraduate Researcher**, 2003-2005.
Furman University, Advisor: Dr. Moses Lee.
 - Synthesis of distamycin related polyamides and determination of DNA minor groove binding properties.

Current Research Interests

- My research group focuses on projects in synthetic organic chemistry and medicinal chemistry.

- Current synthetic organic chemistry work explores the development of new methodology for the synthesis of chiral amines and chiral aza-heterocycles which are important structural motifs in many drug-like molecules.
- Current medicinal chemistry work explores small molecule correctors of the phenylalanine 508-deletion Cystic Fibrosis Transmembrane Conductance Regulator (F508del-CFTR) in collaboration with Dr. Steve Aller of the University of Alabama-Birmingham. Mutated F508del-CFTR is the predominate cause of Cystic Fibrosis.

Publications (Berry College undergraduate students underlined.)

Independent:

1. Jordan, S.; Starks, S. A.; Whatley, M. F.; **Turlington, M.** Highly Stereoselective Synthesis of Terminal Chloro-Substituted Propargylamines and Further Functionalization. *Org. Lett.* **2015**, *17*, 4842-4845.
2. Breton, G. W.; **Turlington, M.** Alternative synthetic routes to N-methyl-1,2,4-triazoline-3,5-dione (MeTAD) and other triazolinedione derivatives. *Tetrahedron Lett.* **2014**, *55*, 4661-4663.

Postdoctoral:

3. Malosh, C.; **Turlington, M.**; Bridges, T. M.; Rook, J. M.; Noetzel, M. J.; Vinson, P. N.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Martínez-Vituro, C. M.; Piedrafita, M.; Sánchez-Casado, M. R.; Macdonald, G. J.; Daniels, J. S.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Acyl dihydropyrazolo[1,5-a]pyrimidinones as metabotropic glutamate receptor 5 positive allosteric modulators. *Bioorg. Med. Chem. Lett.* **2015**, *25*, 5115-5120.
4. **Turlington, M.**; Noetzel, M. J.; Bridges, T. M.; Vinson, P. N.; Steckler, T.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Tong, H. M.; Macdonald, G. J.; Daniels, J. S.; Jones, C. K.; Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Discovery and SAR of a novel series of metabotropic glutamate receptor 5 positive allosteric modulators with high ligand efficiency. *Bioorg. Med. Chem. Lett.* **2014**, *24*, 3641-3646.
5. **Turlington, M.**; Malosh, C.; Jacobs, J.; Manka, J. T.; Noetzel, M. J.; Vinson, P. N.; Jadhav, S.; Herman, E. J.; Lavreysen, H.; Mackie, C.; Bartolomé-Nebreda, J. M.; Conde-Ceide, S.; Martín-Martín, M. L.; Tong, H. M.; López, S.; MacDonald, G. J.; Steckler, T.; Daniels, J. S.; Weaver, C. D.; Niswender, C. M.; Jones, C. K.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Tetrahydronaphthyridine and Dihydronaphthyridinone Ethers As Positive Allosteric Modulators of the Metabotropic Glutamate Receptor 5 (mGlu₅). *J. Med. Chem.* **2014**, *57*, 5620-5637.
6. **Turlington, M.**; Noetzel, M. J.; Chun, A.; Zhou, Y.; Gogliottie, R. D.; Nguyen, E. D.; Gregory, K. J.; Vinson, P. N.; Rook, J. M.; Gogi, K. K.; Ziang, Z.; Bridges, T. M.; Daniels, J. S.; Jones, C.; Niswender, C. M.; Meiler, J.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R. Exploration of Allosteric Agonism Structure–Activity Relationships within an Acetylene Series of Metabotropic Glutamate Receptor 5 (mGlu₅) Positive Allosteric Modulators (PAMs): Discovery of 5-((3-Fluorophenyl)ethynyl)-N-(3-methyloxetan-3-yl)picolinamide (ML254). *J. Med. Chem.* **2013**, *56*, 7976-7996.
7. **Turlington, M.**; Chun, A.; Tomar, S.; Egglar, A.; Grum-Tokars, V.; Jacobs, J.; Daniels, J. S.; Dawson, E.; Saldanha, A.; Chase, P.; Baez-Santos, Y. M.; Lindsley, C. W.; Hodder, P. Mesecar, A. D.; Stauffer, S. R. Discovery of N-(benzo[1,2,3]triazol-1-yl)-N-(benzyl)acetamido)phenyl) carboxamides as severe acute respiratory syndrome coronavirus (SARS-CoV) 3CLpro inhibitors: Identification of ML300 and noncovalent nanomolar inhibitors with an induced-fit binding. *Bioorg. Med. Chem. Lett.* **2013**, *23*, 6172-6177.
8. Blobaum, A. L.; Bridges, T. M.; Byers, F. W.; **Turlington, M. L.**; Mattmann, M. E.; Morrison, R. D.; Mackie, C.; Lavreysen, H.; Bartolomé, J. M.; MacDonald, G. J.; Steckler, T.; Jones, C. K.;

- Niswender, C. M.; Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Daneils, J. S. Heterotropic Activation of the Midazolam Hydroxylase Activity of CYP3A by a Positive Allosteric Modulator of mGlu₅: In Vitro to In Vivo Translation and Potential Impact on Clinically Relevant Drug-Drug Interactions. *Drug Metabolism & Disposition*. **2013**, *41*, 2066-2075.
9. Schulte, M. L. †; **Turlington, M.**†; Phatak, S. S.; Harp, J. M.; Stauffer, S. R.; Lindsley, S. R. Total Synthesis of Stemaphylline N-Oxide and Related C9a-Epimeric Analogues. *Chem. Eur. J.* **2013**, *19*, 11847-11852.
- †*Contributed equally to this work.*
10. Conn, P. J.; Lindsley, C. W.; Stauffer, S. R.; Zhou, Y.; Bartolome-Nebreda, J. M.; MacDonald, G. J. Gogliotti, R. D.; **Turlington, M.** Substituted 5-(prop-1-yn-1-yl)picolinamide analogs as allosteric modulators of metabotropic glutamate receptor subtype 5. *PCT Int. Appl.* **2013**, WO 2013049255.
11. Jacobs, J.; Grum-Tokars, V.; Zhou, Y.; **Turlington, M.**; Saldanha, S. A.; Chase, P.; Egger, A.; Dawson, E. S.; Baez-Santos, Y. M.; Tomar, S.; Mielech, A. M.; Baker, S. C.; Lindsley, C. W.; Hodder, P.; Mesecar, A.; Stauffer, S. R. Discovery, Synthesis, And Structure-Based Optimization of a Series of N-(tert-Butyl)-2-(N-arylamido)-2-(pyridin-3-yl) Acetamides (ML188) as Potent Noncovalent Small Molecule Inhibitors of the Severe Acute Respiratory Syndrome Coronavirus (SARS-CoV) 3CL Protease. *J. Med. Chem.* **2013**, *56*, 534-546.
12. Tarr, J. C.; **Turlington, M.**; Reid, P. R.; Utley, T. J.; Sheffler, D. J.; Cho, H. P. Klar, R.; Pancani, T.; Klein, M. T.; Bridges, T. M.; Morrison, R. D.; Xiang, Z.; Daniels, J. S.; Niswender, C. M.; Conn, P. J.; Wood, M. R.; Lindsley, C.W. Targeting selective activation of M₁ for the treatment of Alzheimer's disease: further chemical optimization and pharmacological characterization of the M₁ positive allosteric modulator ML169. *ACS Chem. Neurosci.*, **2012**, *3*, 884-895.

Graduate:

13. **Turlington, M.**; Pu, L. Asymmetric Alkyne Addition to Aldehydes Catalyzed by BINOL and Its Derivatives. *Synlett*. **2012**, *23*, 649-684.
14. **Turlington, M.**; Pu, L. Reverse the Diastereoselectivity of the Rh(I)-Catalyzed Pauson-Khand Cycloaddition. *Org. Lett.* **2011**, *13*, 4332-4335.
15. **Turlington, M.**; Du, Y.; Ostrum, S. G.; Santosh, V.; Wren, K.; Lin, T.; Sabat, M.; Pu, L. From Highly Enantioselective Catalytic Reaction of 1,3-Diynes with Aldehydes to Facile Asymmetric Synthesis of Polycyclic Compounds. *J. Am. Chem. Soc.* **2011**, *133*, 11780-11794.
16. Yunge, Z.; **Turlington, M.** LaPar, D.J.; Jones, D.R.; Harris, D.A.; Kron, I.L.; Pu, L.; Lau, C.L. Characterization of Novel Synthesized Small Molecular Compounds Against Non-Small Cell Lung Cancer. *Ann. Thorac. Surg.* **2011**, *92*, 1031-1037.
17. Yu, S.; DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Study of the Fluorescent Properties of Partially Hydrogenated 1,1'-Bi-2-naphthol-amine Molecules and Their Use for Enantioselective Fluorescent Recognition. *J. Org. Chem.*, **2011**, *76*, 2814-2819.
18. DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Activation of Vinyl Iodides for Highly Enantioselective Addition to Aldehydes. *Angew. Chem. Int. Ed.* **2011**, *50*, 2368-2370.
19. **Turlington, M.**; Yue, Y.; Yu, X.-Q., Pu, L. Catalytic Asymmetric Synthesis of Chiral Propargylic Alcohols for the Intramolecular Pauson-Khand Cycloaddition. *J. Org. Chem.* **2010**, *75*, 6941-6952.
20. Du, Y. H.; **Turlington, M.**; Zhou, X.; Pu, L. Highly Enantioselective Addition of Linear Alkyl Alkynes to Linear Aldehydes. *Tetrahedron Lett.* **2010**, *51*, 5024-5027.
21. DeBerardinis, A. M.; **Turlington, M.**; Ko, J.; Sole, L.; Pu, L. Facile Synthesis of a Family of H8BINOL-Amine Compounds and Catalytic Asymmetric Arylzinc Addition to Aldehydes. *J. Org. Chem.* **2010**, *75*, 2836-2850.
22. **Turlington, M.**; Pu, L. Preparation of (S)-3,3'-Bis-Morpholinomethyl-5,5',6,6',7,7',8,8'-Octahydro-1,1'-Bi-2-Naphthol. *Org. Synth.* **2010**, *87*, 59-67.

23. DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Catalytic Asymmetric Addition of an in-situ Prepared Arylzinc to Cyclohexanecarboxaldehyde: (R)-(+)- α -Cyclohexyl-3-methoxybenzenemethanol. *Org. Synth.* **2010**, *87*, 68-76.
24. Yue, Y.; **Turlington, M.**; Yu, X.-Q.; Pu, L. 3,3'-Anisyl-Substituted BINOL, H4BINOL, and H8BINOL Ligands: Asymmetric Synthesis of Diverse Propargylic Alcohols and Their Ring-Closing Metathesis to Chiral Cycloalkenes. *J. Org. Chem.* **2009**, *74*, 8681-8689.
25. **Turlington, M.**; DeBerardinis, A. M.; Pu, L. Highly Enantioselective Catalytic Alkyl Propiolate Addition to Aliphatic Aldehydes. *Org. Lett.* **2009**, *11*, 2441-2444.
26. DeBerardinis, A. M.; **Turlington, M.**; Pu, L. Activation of Functional Arylzincs Prepared from Aryl Iodides and Highly Enantioselective Addition to Aldehydes. *Org. Lett.* **2008**, *10*, 2709-2712.

Undergraduate:

27. Brown, T.; Mackay, H.; **Turlington, M.**; Sutterfield, A.; Smith, T.; Sielaff, A.; Westrate, L.; Bruce, C.; Kluza, J.; O'Hare, C.; Nguyen, B.; Wilson, W.D.; Hartley, J.A.; Lee, M. Modifying the N-terminus of polyamides: PyImPyIm has improved sequence specificity over f-ImPyIm. *Bioorg. Med. Chem.* **2008**, *16*, 5266-5276.
28. Brown, T.; Taherbhai, Z.; Sexton, J.; Sutterfield, A.; **Turlington, M.**; Jones, J.; Stallings, L.; Stewart, M.; Buchmueller, K.; Mack, H.; O'Hare, C.; Kluza, J.; Nguyen, B.; Wilson, D.; Lee, M.; Hartley, J.A. Synthesis and biophysical evaluation of minor-groove binding C-terminus modified pyrrole and imidazole triamide analogs of distamycin. *Bioorg. Med. Chem.* **2007**, *15*, 474-483.
29. **Turlington, M.**; Mackay, H.; Rutledge, C.; Taherbhai, Z.; Nguyen, B.; Wilson, D.; Lee, M. Synthesis and biophysical testing of a novel pyrrole-containing polyamide-benzamidine hybrid. *Heterocycl. Commun.* **2006**, *12*, 89-92.
30. Uthe, P.B.; Staples, A.M.; **Turlington, M.**; Jones, J.B.; Blackmon, K.N.; Bailey, S.L.; Buchmueller, K.L.; Lee, M. Novel picolinic acid-containing pyrrole-imidazole polyamides: Synthesis and T-G mismatched base pair recognition. *Heterocycl. Commun.* **2005**, *11*, 163-166.

Presentations

1. Oral Presentation: "Highly Stereoselective Synthesis of Terminal Chloro-Substituted Propargylamines and Further Functionalization." Presented at 71st Southeast Joint Regional Meeting of the American Chemical Society, Memphis, TN, November, 2015.
2. Invited Seminar: "Catalytic Asymmetric Alkyne Additions to Aldehydes." Presented at Shenzhen Graduate School Peking University, China, November 2010.
3. Departmental Seminar (*award based, from 1st place in Departmental Poster Session*): "Catalytic Asymmetric Alkyne Additions to Aldehydes: Progress Toward Versatile Synthetic Intermediates." Presented at University of Virginia, April 2009.
4. Poster Presentation: "Synthesis and Biophysical Testing of a Novel Polyamide-Benzamidine Conjugate." Presented at 57th Southeast Joint Regional Meeting of the American Chemical Society, Memphis, TN, November, 2005.

Service

College Service:

- Faculty Development Committee, 2014-present.
 - Committee Chair, 2015-2016.
- National and International Fellowships and Scholarships Committee, 2014-present.
 - Barry M. Goldwater Scholarship Faculty Representative.

- Endowed Lectureship Committee, 2014-present.
- School of Math and Natural Sciences Safety Committee, 2014-present.
- Center for Integrity in Leadership Planning Committee, 2014-2015.

Professional Service:

- Reviewer for manuscript submitted to the *Journal of Organic Chemistry*, 2015.
- Reviewer for grant submitted to ACS Petroleum Research Fund, 2015.

Community Service:

- “First Friend,” Nashville, TN 2011-2013.
 - Vanderbilt International Student Friendship Partner.
- International Student Friendship Partner, Charlottesville, VA, 2010-2011.
- Abundant Life 5/8 Volunteer, Charlottesville, VA, 2006-2009.
 - Mentoring program for underprivileged 5th-8th grade boys.
 - Lesson leader.
 - Assistant basketball coach.
- Clubhouse Volunteer, Greenville, SC, 2003-2006.
 - Tutoring and mentoring program for underprivileged elementary school children.

Fellowships, Honors, and Awards

- Drew Residential School on Medicinal Chemistry Full Tuition Scholarship, 2012.
- 1st Place, University of Virginia Departmental 3rd Year Poster Session, 2009.
- Merit-Based Departmental Fellowship, University of Virginia, 2006-2009.
- Phi Beta Kappa, 2006.
- Barry M. Goldwater Scholar, 2004-2006.
- James B. Duke Full Tuition Scholarship, Furman University, 2002-2006.